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EXAMINER

YAMNITZKY, MARIE ROSE

ART UNIT	PAPER NUMBER
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1774

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/20/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/761,696

Applicant(s)

LIU ET AL.

Examiner

Marie R. Yamnitzky

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 December 2006 and 11 January 2007.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 10-39 is/are pending in the application.
4a) Of the above claim(s) 17-20,28,29,36,38 and 39 is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 10-16,21-27,30-35 and 37 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 11 Jan 2007.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

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1. This Office action is in response to applicant's amendment filed December 22, 2006, which amends the specification, cancels claims 1-9 and 70, and amends claims 10, 16, 21, 24, 25, 30, 32 and 33.

Claims 10-39 are pending.

The examiner notes that the correct status identifier for each of claims 10, 21, 24, 25, 30, 32 and 33 as set forth in the amendment filed December 22, 2006 is --(Currently Amended)--.

2. The claims remain subject to an election of species requirement.

Claims 10-16, 21-27, 30-35 and 37 continue to read on the elected species.

Claims 17-20, 28, 29, 36, 38 and 39 stand withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on June 30, 2006.

While prior art is applied to some non-elected species in this Office action, this action does not represent an examination on the merits of all non-elected species within the scope of the present claims.

3. The objection to the disclosure for informalities, as set forth in the Office action mailed September 25, 2006, is overcome by the amendment filed December 22, 2006.

The rejection under 35 U.S.C. 112, 2nd paragraph, as set forth in the September 25th action is partly rendered moot by claim cancellation. With respect to the question raised as to whether claims 16's requirement for "potassium triethoxysilylnaphthalene" (now "potassium 2-

(triethoxysilylethyl)naphthalene”) requires a mixture of isomers, the rejection is withdrawn in consideration of applicant’s remarks in the first full paragraph of page 12 of the response.

The prior art rejections under 35 U.S.C. 102(b) based individually on Horowitz et al., Soffer and Edelson as set forth in the September 25th action are rendered moot by claim cancellation. The other prior art rejections set forth in the September 25th action are partly rendered moot by claim cancellation and otherwise overcome by claim amendment.

4. Claims 10-16, 21-27, 30-35 and 37 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claims contain subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Independent claims 10, 21 and 30 have been amended to require A to be selected from the group consisting of fused ring hydrocarbon radicals having from 2 to 5 rings and derivatives thereof. This subgenus of fused ring radicals is not fully supported by the original disclosure. The original disclosure used the phrases “fused ring” radicals and “fused aromatic ring” radicals, and disclosed specific examples of radicals that are fused ring aromatic hydrocarbon radicals. There was no explicit disclosure of fused ring hydrocarbon radicals that are not also fused aromatic ring radicals. However, such fused ring non-aromatic hydrocarbon radicals are within the scope of the present claim language.

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Independent claims 10, 21 and 30 have also been amended to refer to the formula AM, $AM^{n+}X_n^-$ and $\{A-R^3\}^nM^{n+}$ as representing a “radical anion”. The amended claim language is not fully supported by the original disclosure because each formula as a whole is not shown as negatively charged whereas an anion is negatively charged.

5. Claims 10-16, 21-27, 30-35 and 37 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The recitation in independent claims 10, 21 and 30 of “charge transfer-promoting material comprises a radical anion having a formula selected from the group consisting of AM, $AM^{n+}X_n^-$ and $\{A-R^3\}^nM^{n+}$ ” is confusing because each formula as a whole is not shown as negatively charged. It is not clear how each of these formulae can be considered to represent a radical anion.

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 10-13, 15, 21 and 30 are rejected under 35 U.S.C. 102(b) as being anticipated by Ivory et al. (US 4,440,669).

Ivory et al. teach Group IA metal arenes such as sodium naphthalene and potassium naphthalene for use as electron donor agents to make electrically conducting doped polymer compositions that can be used as substrates for electroplating or used to make various electronic devices. For example, see the abstract, column 6, lines 30-34, and c. 8, l. 52-c. 9, l. 25.

Ivory's working examples include examples of electrically conducting doped polymer compositions in which the dopant is sodium naphthalene or potassium naphthalene. Ivory's teaching that metal can be directly deposited on such compositions by electroplating anticipates articles comprising a first metal and a charge transfer-promoting material disposed on the first metal wherein the charge transfer-promoting material is represented by the formula AM wherein M is an alkali metal and A is a fused ring aromatic hydrocarbon radical having two rings. Ivory's teachings regarding use of such compositions in electronic devices, such as the teaching that the compositions can function as the semiconductor part of a metal-semiconductor barrier device, also anticipate articles meeting the limitations of the rejected claims.

With respect to the limitations of present claim 15, one of ordinary skill in the art at the time of the invention would recognize that the first and second metals would be different metals when using a composition comprising sodium naphthalene or potassium naphthalene for purposes such as an electroplating substrate or the semiconductor part of a metal-semiconductor barrier device.

With respect to the device structure set forth in present claims 21 and 30, the recited structure is provided when utilizing a conductive sodium naphthalene doped polymer composition or conductive potassium naphthalene doped polymer composition according to

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Ivory et al. in various of the devices taught by Ivory et al. For example, devices having a p-n junction typically also have at least two electrodes.

8. Claims 10-13, 15, 21-24, 26, 30-32 and 34 are rejected under 35 U.S.C. 102(b) as being anticipated by Kido et al. (US 6,013,384).

Kido's device of Example 4 (column 11, lines 45-65, with reference to c. 8 for the procedure of Ex. 1) meets the limitations of the article as claimed in present claims 10-13 and 15, and the electronic device as claimed in present claims 21-24, 26, 30-32 and 34 wherein the charge transfer-promoting material is represented by the formula AM wherein M is an alkali metal and A is a derivative of a fused ring aromatic hydrocarbon radical having three rings.

Kido et al. also anticipate some other embodiments within the scope of the rejected claims. For example, while Example 4 utilizes the alkali metal lithium (Li) as present M and utilizes diphenylanthracene as present A, Kido et al. disclose various metals within the scope of present M that may be used instead of Li (e.g. see c. 4, l. 15), and teaches other fused ring aromatic hydrocarbon radicals within the scope of present A that may be used instead of diphenylanthracene (e.g. see c. 4, l. 58-61).

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 24, 25, 27, 32, 33, 35 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kido et al. (US 6,013,384) as applied to claims 10-13, 15, 21-24, 26, 30-32 and 34 above, and for the further reasons set forth below.

With respect to present claims 24, 25, 32 and 33, Kido's device of Example 4 utilizes poly(p-phenylenevinylene) as the organic EL material, which is within the scope of the Markush group of claims 24 and 32. Kido et al. teach that "any of the well-known compounds conventionally used in the production of prior art organic EL devices may be suitably used" (c. 6, l. 28-31). The Markush groups of claims 24, 25, 32 and 33 encompass various materials that were well-known in the art at the time of the invention as organic EL materials. Some of these materials are explicitly taught by Kido et al. in c. 4-6. An organo-metallic complex of 8-hydroxyquinoline, as within the scope of present claims 25 and 33, is used in several of Kido's device examples as an organic EL material. It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention to make devices similar in structure to Kido's device of Example 4, but utilizing other known organic EL materials in place of poly(p-phenylenevinylene) in the luminescent layer.

With respect to present claims 27 and 35, the use of multiple light-emissive materials in the same layer or in different layers was well-known in the art at the time of the invention. It would have been a *prima facie* obvious modification to one of ordinary skill in the art at the time of the invention to utilize one or more additional luminescent materials capable of being excited by the light emitted by the PPV of Kido's Example 4 in order to provide a range of wavelengths of emitted light and/or alteration of perceived color (such as in the known practice of using an

emissive dopant in combination with an emissive host) or to provide a color filter effect with a separate filter layer (as was also known in the art at the time of the invention).

With respect to present claim 37, Kido et al. do not disclose making both electrodes out of a substantially transparent material, but it would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention to utilize a substantially transparent electrically conducting material for both electrodes where light emission through both the anode and the cathode are desired.

11. Applicant's arguments filed December 22, 2006 have been fully considered as applicable to the rejection under 35 U.S.C. 112, 2nd paragraph, but they are not persuasive.

Applicant argues that the present claim language clarifies that the formulae set forth in the claims are complete. Applicant argues that even if the formulae were not complete, the limits of what is claimed are clear and definite. The examiner respectfully disagrees. The present claim language of "anion" is not consistent with the formulae which, as a whole, are not shown as being negatively charged. The issue of the formulae and completeness was originally raised in particular because the possibilities for M are not limited to monovalent metals and it was not clear if a material "having" a formula selected from the group is necessarily a material represented by said formula. For example, a material represented by the formula A_2M can not accurately be said to be represented by the formula AM , but can be said to have (i.e. comprise) the formula AM if the formula AM is not a complete formula for the material.

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12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

13. Any inquiry concerning this communication should be directed to Marie R. Yamnitzky at telephone number (571) 272-1531. The examiner works a flexible schedule but can generally be reached at this number from 7:00 a.m. to 3:30 p.m. Monday-Friday.

The current fax number for all official faxes is (571) 273-8300. (Unofficial faxes to be sent directly to examiner Yamnitzky can be sent to (571) 273-1531.)

MRY
March 16, 2007



MARIE YAMNITZKY
PRIMARY EXAMINER

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